

WHAT IS CLAIMED IS:

1. A transmission-reception system for transmitting and receiving digital data, which must be transmitted divisionally in a plural number of times and do not admit a miss thereof, on the real time basis, comprising:

a transmission apparatus including division means for dividing the digital data into a predetermined number of data units of an equal size, information addition means for adding, to that one of the transmission data units obtained by the division of the digital data by said division means which is to be transmitted first, information representing that the transmission data unit is the first transmission data unit and adding, to each of those ones of the transmission data units which are to be successively transmitted following the first transmission data unit, information representing that the transmission data unit is a succeeding transmission data unit, and transmission means for transmitting the transmission data units to which the information is added by said information addition means on the real time basis; and

a reception apparatus including reception means for receiving the data units transmitted on the real time

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basis from said transmission apparatus, and restoration means for positioning that one of the data units received by said reception means to which the information representing that the data unit is the first data unit as top data is added and positioning each of the data units received following the first data unit to which the information representing that the data unit is a succeeding data unit is added as succeeding data next to the last one of the data units which have been received till then.

2. A transmission-reception system according to claim 1, wherein said transmission apparatus further includes end data formation means for forming end data representative of the end of transmission of the digital data transmitted as the transmission data units and said transmission means transmits the end data from said end data formation means immediately after the last one of the transmission data units of the digital data to be transmitted is transmitted, and said reception apparatus includes discrimination means for discriminating whether or not the data of any of the data units received by said reception means are the end data.

3. A transmission-reception system according to claim 2, wherein said transmission apparatus further

includes transmission data sum total calculation means for calculating the sum total of the data of the data units divided by said division means and said end data formation means forms the end data which include the sum total calculated by said transmission data sum total calculation means, and said reception apparatus further includes receive data sum total calculation means for calculating the sum total of the received data received by said reception means and including the data of the data unit to which the information representing that the data unit is the first data unit is added and the data of the data units to each of which the information representing that the data unit is a succeeding data unit is added, and discrimination means for comparing the sum total of the received data calculated by said receive data sum total calculation means with the sum total of the data of the data units included in the end data to discriminate whether or not all of the digital data transmitted are received normally.

4. A transmission-reception system according to claim 1, wherein the digital data to be transmitted are divided into a predetermined number of data units, and said reception apparatus includes counting means for counting the number of the data unit to which the

information representing that the data unit is the first data unit is added and the data units to each of which the information representing that the data unit is a following data unit is applied.

5. A transmission-reception system according to claim 1, wherein the digital data are text data.

6. A transmission-reception system according to claim 1, wherein main information data in the form of digital data can be transmitted between said transmission apparatus and said reception apparatus on the real time basis, and the digital data are duplication control information or copyright information regarding the main information data or ancillary data for allowing said reception apparatus to play back the main information data in accordance with a method or standards determined in advance.

7. A transmission-reception system according to claim 1, wherein main information data in the form of digital data can be transmitted between said transmission apparatus and said reception apparatus, and the digital data are ancillary data for allowing said reception apparatus to play back multi-channel digital audio data as the main information data in accordance with a number of channels of said reception apparatus and in accordance

with a method or standards determined in advance.

8. A transmission apparatus, comprising:

division means for dividing digital data, which must be transmitted divisionally in a plural number of times and do not admit a miss thereof, into a predetermined number of data units of an equal size;

information addition means for adding, to that one of the transmission data units obtained by the division of the digital data by said division means which is to be transmitted first, information representing that the transmission data unit is the first transmission data unit and adding, to each of those ones of the transmission data units which are to be successively transmitted following the first transmission data unit, information representing that the transmission data unit is a succeeding transmission data unit; and

transmission means for transmitting the transmission data units to which the information is added by said information addition means on the real time basis.

9. A transmission apparatus according to claim 8, further comprising end data formation means for forming end data representative of the end of transmission of the digital data transmitted as the transmission data units, and wherein said transmission means transmits the end

data from said end data formation means immediately after the last one of the transmission data units of the digital data to be transmitted is transmitted.

10. A transmission apparatus according to claim 9, further comprising transmission data sum total calculation means for calculating the sum total of the data of the data units divided by said division means, and wherein said end data formation means forms the end data which include the sum total calculated by said transmission data sum total calculation means.

11. A transmission apparatus according to claim 8, wherein the digital data are text data.

12. A transmission apparatus according to claim 8, wherein said transmission apparatus can transmit main information data in the form of digital data on the real time basis, and the digital data are duplication control information or copyright information regarding the main information data or ancillary data for allowing a reception apparatus to play back the main information data in accordance with a method or standards determined in advance.

13. A transmission apparatus according to claim 8, wherein said transmission apparatus can transmit main information data in the form of digital data on the real

time basis, and the digital data are ancillary data for allowing said reception apparatus to play back multi-channel digital audio data as the main information data in accordance with a number of channels of said reception apparatus and in accordance with a method or standards determined in advance.

14. A reception apparatus for receiving data successively transmitted thereto on the real time basis and including digital data, which must be transmitted divisionally in a plural number of times and do not admit a miss thereof, divided into a plurality of data units of an equal size, information added to that one of the data units which is transmitted first and representing that the data unit is the first data unit, and information added to each of those ones of the data units which are successively transmitted following the first data unit and representing that the data unit is a following data unit following the first data unit, comprising:

reception means for receiving the data units transmitted on the real time basis; and

restoration means for positioning that one of the data units received by said reception means to which the information representing that the data unit is the first data unit as top data is added and positioning each of

the data units received following the first data unit to which the information representing that the data unit is a succeeding data unit is added as succeeding data next to the last one of the data units which have been received till then.

15. A reception apparatus according to claim 14, wherein end data representative of the end of transmission of the digital data are transmitted immediately after the last one of the data units of the digital data to be transmitted is transmitted, and further comprising discrimination means for discriminating whether or not the data of any of the data units received by said reception means are the end data.

16. A reception apparatus according to claim 15, wherein the end data include the sum total of the data of the data units transmitted, and further comprising receive data sum total calculation means for calculating the sum total of the received data received by said reception means and including the data of the data unit to which the information representing that the data unit is the first data unit is added and the data of the data units to each of which the information representing that the data unit is a succeeding data unit is added, and discrimination means for comparing the sum total of the



received data calculated by said receive data sum total calculation means with the sum total of the data of the data units included in the end data to discriminate whether or not all of the digital data transmitted are received normally.

17. A reception apparatus according to claim 14, wherein the digital data to be transmitted are divided into a predetermined number of data units, and said reception apparatus includes counting means for counting the number of the data unit to which the information representing that the data unit is the first data unit is added and the data units to each of which the information representing that the data unit is a following data unit is applied.

18. A reception apparatus according to claim 14, wherein the digital data are text data.

19. A reception apparatus according to claim 14, wherein said reception apparatus can receive main information data in the form of digital data transmitted thereto on the real time basis, and the digital data are duplication control information or copyright information regarding the main information data or ancillary data for allowing said reception apparatus to play back the main information data in accordance with a method or standards

determined in advance.

20. A reception apparatus according to claim 14, wherein said reception apparatus can receive main information data in the form of digital data transmitted thereto on the real time basis, and the digital data are ancillary data for allowing said reception apparatus to play back multi-channel digital audio data as the main information data in accordance with a number of channels of said reception apparatus and in accordance with a method or standards determined in advance.

21. A transmission-reception method for transmitting and receiving digital data, which must be transmitted divisionally in a plural number of times and do not admit a miss thereof, on the real time basis, comprising:

a division step performed by a transmission apparatus of dividing the digital data into a predetermined number of units of an equal size;

an information addition step performed by said transmission apparatus of adding, to that one of the transmission data units obtained by the division of the digital data by the division step which is to be transmitted first, information representing that the transmission data unit is the first transmission data

unit and adding, to each of those ones of the transmission data units which are to be successively transmitted following the first transmission data unit, information representing that the transmission data unit is a succeeding transmission data unit;

a transmission step performed by said transmission apparatus of transmitting the transmission data units to which the information is added by the information addition step on the real time basis;

a reception step performed by a reception apparatus of receiving the data units transmitted on the real time basis from said transmission apparatus; and

a restoration step performed by said reception apparatus of positioning that one of the data units received by the reception step to which the information representing that the data unit is the first data unit as top data is added and positioning each of the data units received following the first data unit to which the information representing that the data unit is a succeeding data unit is added as succeeding data next to the last one of the data units which have been received till then.

22. A transmission-reception method according to claim 21, further comprising an end data formation step

performed by said transmission apparatus of forming end data representative of the end of transmission of the digital data transmitted as the transmission data units, the transmission step transmitting the end data formed by the end data formation step immediately after the last one of the transmission data units of the digital data to be transmitted is transmitted, and a discrimination step performed by said reception apparatus of discriminating whether or not the data of any of the data units received by the reception step are the end data.

23. A transmission-reception method according to claim 22, further comprising a transmission data sum total calculation step performed by said transmission apparatus of calculating the sum total of the data of the data units divided by the division step, the end data formation step forming the end data which include the sum total calculated by the transmission data sum total calculation step, a receive data sum total calculation step executed by said reception apparatus of calculating the sum total of the received data received by the reception step and including the data of the data unit to which the information representing that the data unit is the first data unit is added and the data of the data units to each of which the information representing that

the data unit is a succeeding data unit is added, and a discrimination step executed by said reception apparatus of comparing the sum total of the received data calculated by the receive data sum total calculation step with the sum total of the data of the data units included in the end data to discriminate whether or not all of the digital data transmitted are received normally.

24. A transmission-reception method according to claim 21, wherein the digital data to be transmitted are divided into a predetermined number of data units, and further comprising a counting step performed by said reception apparatus of counting the number of the data unit to which the information representing that the data unit is the first data unit is added and the data units to each of which the information representing that the data unit is a following data unit is applied.

25. A transmission-reception method according to claim 21, wherein the digital data are text data.

26. A transmission-reception method according to claim 21, wherein main information data in the form of digital data can be transmitted between said transmission apparatus and said reception apparatus, and the digital data are duplication control information or copyright information regarding the main information data or

ancillary data for allowing said reception apparatus to play back the main information data in accordance with a method or standards determined in advance.

27. A transmission-reception method according to claim 21, wherein main information data in the form of digital data can be transmitted between said transmission apparatus and said reception apparatus, and the digital data are ancillary data for allowing said reception apparatus to play back multi-channel digital audio data as the main information data in accordance with a number of channels of said reception apparatus and in accordance with a method or standards determined in advance.